

Music Recommendation Based on Face Recognition

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Abstract - This project Emo player (an emotion-based music player) may be a novel approach that helps the user to automatically play songs supported by the emotions of the user. It recognized the facial emotions of the user and plays the songs according to their emotion. The emotions are recognized using a machine learning method Support Vector Machine algorithm. SVM is often used for classification or regression problems. It finds an optimal boundary between the possible output. The training dataset which we used to be Olivetti faces which contains 400 faces and its desired values or parameters. Within the field of emotion recognition, most of the work has been done on western music but very less on Indian classic Music. In this paper, we are proposing a system which will help to recognize an emotion for Indian classic Music.

Index Terms - Support Vector Machine, Face Recognition, Emotion Classifier.

I.INTRODUCTION

Music play's a very major role in enhancing a person's life because it is an important medium of entertainment for music lovers and listeners and sometimes even imparts a therapeutic approach. In today's world, with ever-increasing advancements within the field of multimedia and technology, various music players are developed with features like fast forward, reverse, variable playback speed (seek & time compression), local playback, streaming playback with multicast streams. Although these features satisfy the user's basic requirements, yet the user has got to face the task of manually browsing through the playlist of songs and choose songs that supported his current mood and behaviours. With the introduction of Audio Emotion Recognition, a number of the music players have advanced features like providing lyrics and recommending similar songs that supported the singer or genre. this will be accomplished through the system reacting to the user's

emotion, saving time that might are spent entering information manually.

II. METHODOLOGY

The proposed algorithm in this involves an emotion music recommendation system that provides the generation of a customized playlist in accordance to the user 's emotional state. The proposed algorithm involves following modules.

- Input Image
- Testing Image
- Face Detection
- Landmark Point Extraction
- Training Data
- Training of SVM & Trained SVM
- Music Player

Problem Definition:

Music is one of the most effective media as it can instil deep feelings and swamp listener with subliminal messages It deftly plays with our emotion which intern play at on mood. It can aid us when we are feeling low and empower us. To enhance the mood of the user by designing software based on Image Processing that detects the emotion and plays the music accordingly.

A. Functional Requirements:

Functional requirements are a statement of services the system should give, how the system should respond to specific inputs and how the system should behave in a specific situation.

- The dataset train by support vector classifier
- Machine learns support vector classification using support vector machine.
- Learn and identify image capture by webcam.

B. Non-Functional Requirements:

Non-functional requirements define system properties and constraints it arises through user needs, because of budget constraints or organizational policies, or due to external factors such as safety regulations, privacy registration and so on. Non-functional requirements are:

- Reliability
- Maintainability
- Portability
- Extensibility

III. MODELING AND ANALYSIS

System Architecture:

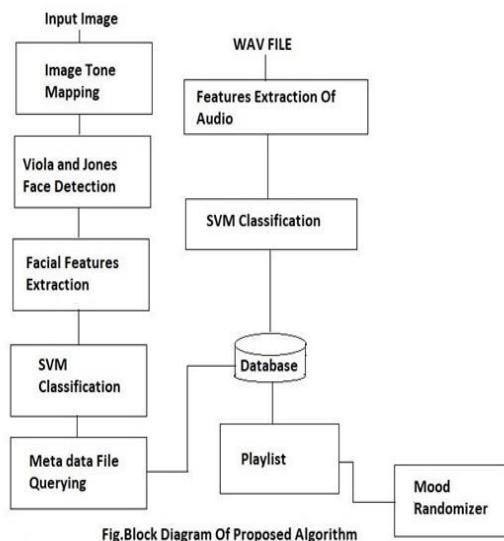
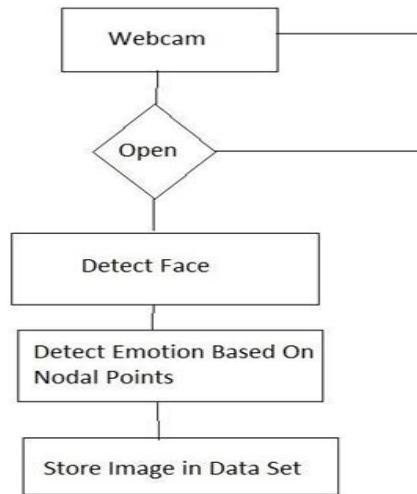


Fig1 is that the system architecture. This architecture shows flow of the system. Its show the Step-by-step activity of the system. The system starts first and takes image of user as input. System proposes Viola and Jones Face Detection algorithm for face detection. After face detection facial feature extraction is completed for emotion classifier. supported feature extraction SVM classification of features is completed. Meta file querying is completed supported classification of facial feature extraction. Meta file querying is employed for emotion classifier. Emotion classifier detects the mood of user supported countenance. Mood randomizer plays song accordingly. Another component of system describes sentinel approach supported input voice. Input vice is taken as input and speech recognition is processed. Noise removal is further step to offer efficient result.

System Design:



In system design Firstly an image is captured through the system's web camera. Image is captured and detected face through the viola jones algorithm. After detection of the face the emotion of a user is detected with the help of facial nodal points. then the Support Vector Machine (SVM) classifies facial nodal points based on their categories classifies nodal points to detect emotion. Based on the trained dataset image is stored and emotion is extracted. This system describes further processing of emotion detection.

IV. RESULTS AND DISCUSSION

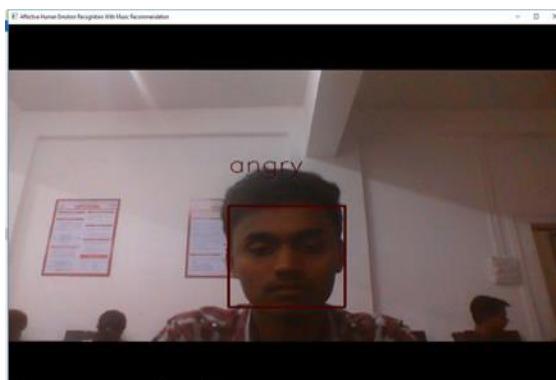
Sample Screenshot During Testing:

A screenshot of a Python IDLE window. The code being run is:

```

Python 3.5.4 (v3.5.4:142d542, Aug 2 2017, 02:17:05) [GCC v1100 64 bit (AMD64)]
on win32
Type "copyright", "credits" or "license()" for more information.
>>>
/home/RASHRAT/F:/Python/HWProject/Musician/Musician-Master/Project_A/d.py
using TensorFlow backend.

Warning (from warnings module):
  File "/F:/Python/lib/site-packages/tensorflow/python/leaving.py", line 327
    warnings.warn('Error in loading the saved optimizer')
UserWarning: Error in loading the saved optimizer state. As a result, your model
is starting with a freshly initialized optimizer.
  
```



V. CONCLUSION

The system thus aims at providing the Windows OS users with a less expensive, additional hardware-free and accurate emotion-based music system. The Emotion Based Music System is going to be of great advantage to users trying to find music that supported their mood and emotional behaviour. it will help reduce the searching time for music thereby reducing the unnecessary computational time and thereby increasing the general accuracy and efficiency of the system. The system will not only reduce physical stress but also will act as a boon for the music therapy systems and should also assist the music therapist to therapize patient. Also, with its additional features, the longer-term scope within the system would style mechanism that might be helpful in music therapy treatment and supply the music therapist the assistance needed to treat the patients affected by disorders like mental stress, anxiety, acute depression and trauma. The proposed system also tends to avoid in future the unpredictable results produced in extremely bad light conditions and really poor camera resolution.

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Prof Pravin Patil is currently working as a Professor in the Department of Computer Engineering at Zeal College of Engineering and Research, Pune, India.

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